CLAIMS

1. An electric actuator comprising a feed screw in a shape of a straight rod rotatably supported by a bearing member on a base,

a nut member screwed to said feed screw to reciprocate in an axial direction of said feed screw by normal and reverse rotation of said feed screw,

a transfer table connected to said nut member with a degree of freedom in said axial direction of said feed screw to transfer a workpiece by moving to follow said nut member,

a stepping motor a rotation amount of which can be controlled according to the number of drive pulses,

a transmission mechanism for transmitting rotating force of said stepping motor to said feed screw, and

spring means disposed between said nut member and said transfer table to elastically connect said transfer table and said nut member when said transfer table transfers said workpiece to thereby allow said nut member to overrun, to allow said stepping motor to excessively rotate in a cushioned manner, and to apply a necessary thrust to said transfer table after said transfer table reaches a transfer end of said workpiece.

2. An electric actuator according to claim 1, wherein said base has a sectional groove shape with an open upper face, said feed screw extends axially in a central portion of said groove, said nut member has a short pillar shape and is connected to said feed screw to move in said groove in said base, said transfer table has a sectional groove shape and is disposed on an upper face of said base such that said nut member is covered with said transfer table and that said transfer table can move under a guidance of said base, and a connecting member for connecting said transfer table and said nut member is disposed between said transfer table and said nut member such that said connecting member is engage with one of said transfer table and said nut member with a degree of freedom in said axial direction of said feed screw and is engaged with the other with a degree of freedom in a direction orthogonal to an axis of said feed screw.

3. An electric actuator according to claim 2, wherein said connecting member and said transfer table are engaged with each other by elongated holes formed in left and right opposite side walls of said transfer table and studs screwed to said connecting member through said elongated holes with a degree of freedom in a range of a length of said elongated holes and in said axial direction

of said feed screw and said connecting member and said nut member are engaged with each other by notch portions formed on opposite side faces of said nut member and projecting portions formed on left and right connecting walls of said connecting member to be fitted with said notch portions with a degree of freedom in said direction orthogonal to said axis of said feed screw.

4. An electric actuator according to claim 2, wherein a linear guide mechanism formed of a plurality of balls which can roll is disposed between opposite side walls of said transfer table and opposite groove walls of said base.

5. An electric actuator according to claim 1, wherein said transfer table has a spring receiver through which said feed screw passes on an axial front end portion side of said transfer table and said spring means is disposed between said spring receiver and a spring seat at a tip end of said nut member to thereby elastically connect said transfer table and said nut member in forward movement of said transfer table.

6. An electric actuator according to claim 1, wherein said transfer table has spring receivers through

which said feed screw passes at axial front and rear end portions of said transfer table and said spring means are respectively disposed between said spring receivers and spring seats at front and rear opposite ends of said nut member to thereby elastically connect said transfer table and said nut member in both forward movement and rearward movement of said transfer table.

7. An electric actuator according to claim 6, wherein said spring seat on said front end side of said nut member can come in contact with and separate from said nut member and a maximum separating distance of said spring seat from said spring receiver in rearward movement of said nut member is defined, and means for defining said maximum separating distance is a sleeve extending from said spring seat toward said spring receiver and locked to said spring receiver at a rearward movement end of said spring seat.

8. An electric actuator according to claim 2, wherein said transfer table has a spring receiver through which said feed screw passes on an axial front end portion side of said transfer table and said spring means is disposed between said spring receiver and a spring seat at a tip end of said nut member to thereby elastically

connect said transfer table and said nut member in forward movement of said transfer table.

9. An electric actuator according to claim 2, wherein said transfer table has spring receivers through which said feed screw passes at axial front and rear end portions of said transfer table and said spring means are respectively disposed between said spring receivers and spring seats at front and rear opposite ends of said nut member to thereby elastically connect said transfer table and said nut member in both forward movement and rearward movement of said transfer table.

10. An electric actuator according to claim 9, wherein said spring seat on said front end side of said nut member can come in contact with and separate from said nut member and a maximum separating distance of said spring seat from said spring receiver in rearward movement of said nut member is defined, and means for defining said maximum separating distance is a sleeve extending from said spring seat toward said spring receiver and locked to said spring receiver at a rearward movement end of said spring seat.

11. An electric actuator according to claim 1,

wherein measuring means for measuring movements of said transfer table and said nut member with respect to each other at said workpiece transfer end is provided to said transfer table.